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In New Jersey, Prevention, Not Suppression, Is Key to Controlling the SPB

Lack of Forest Management within the State Has Allowed Beetle to Flourish

Text and photos by Joseph M. Smith

It was 2001 when consulting forester and SAF member Bob Williams, CF, spotted the southern pine beetle (SPB) in Millville, New Jersey (in Cumberland County). Since then, the pest has affected an estimated 30,000–40,000 acres.

According to the *Philadelphia Inquirer,* the SPB killed 14,000 acres of pine forest in 2010. State forestry officials expected the same for 2011; however, recent surveys revealed damage of only half that amount. Although the jury is still out on why, explanations range from the impact of pine beetle predator the checkered beetle *(Thanasimus dubius Fabricius),* to woodpeckers, to 2011's unusually wet summer and fall, or some combination thereof.

Consulting forester and SAF member Bob Williams, CF, spotted the southern pine beetle in Millville, New Jersey (in Cumberland County), in 2001. Since then, the pest has affected an estimated 30,000–40,000 acres and had a dramatic impact on the state's pine forests, such as this parcel of forestland near the town of Estell Manor (in Atlantic County).

As for what causes pine beetle populations to decrease or determines how long they last, Kier Klepzig, assistant director–Research at the US Forest Service's Southern Research Station and coeditor of the station's celebrated report, *Southern Pine Beetle II,* notes that there are several factors, ranging from the availability of the host resource—sometimes outbreaks crash because there are no trees left—to the prevalence of predators and parasites. Weather "doesn't explain a lot," he says.

Klepzig isn't sure how the beetle's population trends in New Jersey are likely to play out, but he said it's normal for pine beetle populations to fluctuate. So, despite the decreased damage caused by the SPB in 2011, New Jersey may not be out of the woods yet.

"If you look at trends over time, you can see these nice little sign-wave graphs where it goes up and down and up and down, and if you line up the peaks it's about every seven to 10 years that you see a big outbreak," he said. "Right now, if you want to collect SPB, the place to go is New Jersey."

Yet, regardless of why the acreage damaged by the SPB was lower than in years past, no one disputes that the beetle has had a dramatic impact on the state's pine forests, which are in poor health due to a lack of management. In testimony before the state Senate Environment and Energy Committee on August 25, 2011, Barbara McConnell, legislative affairs agent for the New Jersey Forestry Association, a group that represents hundreds of private landowners in the state, put it this way:

"The New Jersey Pinelands, which is where the outbreak of the southern pine beetle is most prevalent—although there are thousands of acres outside of the Pinelands, as we know it, that are also affected by this beetle—and I would say that approximately two-thirds of that 1.1 million acres is privately owned. And those privately owned acres have gone 30 years without bring properly managed, such as the need to thin or to harvest or to have any kind of pest control."

Williams concurs.

"The pest is thoroughly controlled from eastern Texas to Florida to Delaware—but not here," he said in his testimony at the August 25 hearing. "There is a very simple reason for that—we essentially have no forest management. As a forester, I certainly manage land … but when you look at the context of the size of the forest, we're not managing the forest. A few thousand acres of management isn't going to have any impact."

To get a firsthand look at the beetle's

impact on the state, I took a trip to New Jersey in early February and spent the day with Williams, who took me on a tour of some infested forests, showed me what's being done to limit the beetle's spread, and explained why preventative forest management is the solution.

Our first stop—a mixed hardwood–pine stand behind a strip mall—was just a few miles down the road from my hotel. One of the lessons here was clear: no amount of forest, whatever the size and wherever it's located, is off-limits to the SPB. Another was that, even on a small parcel like this, where there was a mix of dead and healthy pitch, Virginia, and shortleaf pine—the latter of which Williams classified as "limited" in the state)—there are a lot of factors to consider.

Pitch tubes on the trunk of an infested tree. The defense mechanism for individual trees is resin production, and the more vigorous the tree is, the greater its resin-flow potential is and, therefore, the more capable of "pitching out" the SPB.

"I would come in and cut a strip of these green pines as a buffer, and the width of that would vary, but I've got green trees in there and in there. This is where silviculture comes in, because you've got to make some decisions. We'd have to cut some of the bark off of these green ones and see if there are some [beetles] in there, but we've had instances where the trees looked good and we took them down and found [pitch] tubes in the crowns, so it gets real complicated. But if this is your land, you can't just walk away."

In addition, said Williams, the ecological characteristics of a forest can enhance that difficulty.

"Some beetle-infested stands may be of high ecological value, where you have standing dead tress, an uneven-aged structure, and that type of forest is rare right now in New Jersey," he said. "I'm a big proponent, particularly on public land, of having a plan. You don't just go in and say, 'Oh, I've got beetles, I need to cut all the trees.' There's a lot more to it."

Cut and Remove

Later in the day, after a visit to a small private ownership on which the landowner was trying to protect the remaining mature pine from the beetles infesting his 40-acre property, Williams took me to a forest near the town of Estell Manor (in Atlantic County), to see a 175-acre salvage, suppression, and restoration project in a forest with 600 acres of beetle-killed trees.

"This is a salvage operation. The trees are still solid, so we can salvage the wood and make some product out of them," he said. "You can see how we're trying to save the green patches on both sides by going in and thinning them once (the loggers) open this up. These trees are about 90 years old—this whole property was a munitions dump in World War I—this whole property has regenerated from when it was probably all cleared during the war. Here we have some of our best pine—our oldest, biggest stands—being wiped out."

Next, Williams brought me to an area a short distance away from the salvage site that had been commercially thinned six years earlier. It was as if the beetles were stopped by an invisible barrier. On one side of the line was a stand of dead trees, on the other side—the side that had been thinned—the trees were healthy and green.

Although he didn't use the term when we spoke, Williams's approach to controlling the spread of SPB is what's known as the "cut and remove" strategy, a method that involves prompt removal of all the infested trees in an area of infestation (or "spot"), plus an adjacent buffer strip of green trees.

As Bud Mayfield, research entomologist with US Forest Service, explains in an August 2011 American Tree Farm System (ATFS) webinar titled, "Southern Pine Beetle: What a Tree Farmer Needs to Know," the first step in implementing this procedure is to identify the active "head" of the spot—the site of the most recently infested trees and the point from which expansion of the infestation is likely to occur. The second step is identifying and cutting a buffer strip.

"At that point, you want to mark those trees or a boundary around them and then include a buffer strip of green trees that you're going to include with the infested trees, just to make sure that you're getting out ahead of that spot and not missing any freshly attacked trees that might not even be producing pitch tubes yet," he continues. "The width of the buffer strip usually does not need to be wider than the average height of the trees."

Standing dead trees, says Mayfield, should be left in place, as long as they're free of beetles.

As John Nowack, regional manager of the Southern Pine Beetle Prevention Program for the US Forest Service in Asheville, North Carolina, notes in the same ATFS webinar, this type of thinning helps control the spread of SPB in two ways: increasing tree vigor and disrupting the beetle's ability to communicate.

"The defense mechanism for individual trees is resin production, and the more vigorous the tree is the greater the resin-flow potential is and, therefore, that tree is more capable of pitching out the SPB," he says. "Also, thinning changes the physical environment within the stand. By thinning you change the microclimate. The SPB communicates through pheromones, and in more open stands the pheromone is more dispersed."

Yet, as promising as such strategies

are for suppressing the spread of the SPB, given the vast amount of acreage in New Jersey in need of management, Williams argues that efforts to suppress the beetle won't be effective without a greater emphasis on prevention. To drive that point home, Williams took me to see the heavily forested area in southern New Jersey known as the Pine Barrens or Pinelands.

At more than one million acres, the Pine Barrens gets its name from its white, sandy soil. It's also known for its population of rare pygmy pitch pine, as well as for being home to a large portion of the state's cranberry production. (According to Wikipedia, New Jersey is the third largest producer of cranberries in the country.)

One of those cranberry producers is Joe Darlington, and his cranberry farm and 500-acre stewardship forest were the last stop on my trip. When we arrived, Jim Thompson, a contractor who shaves logs to make bedding for livestock, was removing logs from a 40-acre parcel that had recently been thinned. Williams, who supervises Thompson's work, described the project as a "prevention thinning" that, when completed, would be "better able to withstand beetle attack and fire, and result in the overall improvement of the stand."

According to Williams, "prevention thinning," such as that pictured here, is needed throughout the New Jersey Pine Barrens if this area is going to survive a southern pine beetle outbreak.

This notion of prevention brings us full circle, back to the point of Williams's testimony at the August 25 New Jersey Senate hearing. For him, the work being performed on this 40-acre site is needed throughout the Pine Barrens on a massive scale if this area is going to survive a pine beetle infestation—something Williams foresees in the not-too-distant future.

"The mixed hardwood pine forests that [the SPB] is attacking now are not the high-risk optimum forests that it wants to attack," he said. "When it gets into Burlington and Ocean County, where we have hundreds of thousands of overstocked, stressed pine forests, that's when you will see 10,000, 20,000 acres killed off in a pop. That's when people are going to realize the extent and severity of the problem."

For Williams, though, there is at least a potential bright spot associated with the SPB—the chance to educate the public about forestry.

"We can control [the SPB] if we want to, but people don't know what forestry is and how it can help. As a result, the beetle has now become a political and social issue," he said. "The beetle is a wonderful opportunity to promote forestry, but to capitalize on it, we need to talk to the public."

Smith is Society Affairs editor of The Forestry Source.